

New geographical record of the lined rockskipper, *Istiblennius lineatus* (Valenciennes, 1836) from the Iranian coast of the Makran Sea (Teleostei, Blenniidae)

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Abstract

The lined rockskipper, *Istiblennius lineatus*, is a species of combtooth blenny fish distributed from the Laccadive and Maldive islands, central Indian Ocean, east to Mangareva and Gambier Islands in the Pacific Ocean. It occurs as far north as Toyohama, Japan, and now it is recorded from the coastal area of the Makran Sea, Iran. Six specimens of *I. lineatus* were collected from 3 localities in the Iranian coast of the Makran Sea during a fish survey in November 2015. These specimens represent the first record of the species from Iranian waters as well as an extension of its known geographical range within the Indian Ocean. The morphological features of these specimens are herein described and discussed.

Key words

Blenniidae; geographical range; range extension; morphological characteristics.

Academic editor: Arturo Angulo | Received 12 September 2017 | Accepted 11 October 2017 | Published 3 November 2017

Citation: Mehraban HR, Esmaili HR (2017) New geographical record of the lined rockskipper, *Istiblennius lineatus* (Valenciennes, 1836) from the Iranian coast of the Makran Sea (Teleostei, Blenniidae). Check List 13 (6): 743–746. <https://doi.org/10.15560/13.6.743>

Introduction

The family Blenniidae (combtooth blennies) comprises 58 genera and 397 species (Nelson et al. 2016) of small benthic fishes. They are distributed worldwide, with most species occurring in shallow, coastal, tropical and temperate marine waters, along with a few species known from fresh and/or brackish water where they occur in a variety of habitats: rocky intertidal, coral reefs, mangroves, oyster beds, and in the lower reaches of most rivers (see Patzner et al. 2009, Lin and Hastings 2013). Combtooth blennies share several unique features including incisiform teeth in a single comb-like row on the dentaries and premaxil-

laries. While the family is easily distinguished from other blennies, the classification within the Blenniidae has a long and complicated history (Lin and Hastings 2013).

The genus *Istiblennius* Whitley, 1943, in the tribe Salariae, comprises 14 valid species (Froese and Pauly 2017) that extend over the entire tropical Indo-west and central Pacific (Springer and Williams 1994) including the Persian Gulf and Makran Sea. To date, 3 species of the genus *Istiblennius* have been reported from the Persian Gulf and Makran Sea (Gulf of Oman): *I. edentulus* (Forster and Schneider, 1801), *I. pox* Springer and Williams, 1994, and *I. spilatus* Springer and Williams, 1994.

We herein report the first record of occurrence of *I.*



Figure 1. Sampling sites of *Istiblennius lineatus* (red circles) from the Iranian coast of the Makran Sea.

lineatus (Valenciennes, 1836) from the Iranian coast of Persian Gulf and Makran Sea and provide a morphological description of the specimens supporting such record.

Methods

The specimens of *I. lineatus* supporting this new occurrence record were deposited in the Zoological Museum of the Shiraz University, Collection of Biology Department, Shiraz (ZM-CBSU). Two specimens, ZM-CBSU P579 and ZM-CBSU P586, with total lengths (TL) of 46.2–47.1 mm and standard lengths (SL) of 38.3–40.1 mm were collected from a shallow rocky reef located near Bandar-e-Jask, Bahal, Hormozgan province, Iran (25°41'68" N, 057°53'26.46" E; Fig. 1) on 4 December 2015 at low tide using a hand net. Three more specimens, ZM-CBSU P718, ZM-CBSU P723, and ZM-CBSU P729, with 70.8–73.9 mm TL and 59.8–64.1 mm SL were collected from Darya Bozorg, Chabahar, Sistan and Baluchestan Province, Iran (25°16'66.5" N, 060°39'94.6" E; Fig. 1) on 6 May 2016. After anesthesia, the specimens were fixed in 5% formaldehyde and later stored in 70% ethanol. One more additional specimen, ZM-CBSU M1643 with 43.42 mm TL and 36.12 mm SL was collected from Bandar-e-Jask, Gugsar, Hormozgan province, Iran (25°33'57.2" N, 058°48'23.6" E; Fig. 1) on 5 December 2015 and was fixed in 95% alcohol and brought to the laboratory.

Morphometric measurements (Table 1) were taken to the nearest 0.1 mm using digital calipers. A stereomicroscope was used for the meristic characters. Morphometric characters were expressed as a percentage of standard length (SL) or a percentage of head length (HL) as appropriate. Morphometric methods followed Alp and Kara (2007); meristic methods followed Springer and Williams (1994).

Table 1. Morphometric characters of 5 specimens of *I. lineatus* collected from the Iranian coast of the Makran Sea. TL and SL in mm.

Morphometric measurements	Min.	Max.	Mean
Total length (TL)	46.21	73.92	62.09
Standard length (SL)	38.31	64.10	52.98
Standard length (SL) /TL	0.83	0.87	0.85
Head length (HL) /SL	0.21	0.24	0.22
Head depth (HD) /SL	0.15	0.16	0.16
Post-orbital distance /SL	0.14	0.15	0.16
Inter-orbital distance /SL	0.02	0.03	0.02
Eye diameter/SL	0.05	0.07	0.06
Pre-dorsal distance/SL	0.19	0.21	0.20
Length of dorsal fin/SL	0.80	0.87	0.85
Length of anal fin/SL	0.47	0.49	0.48
Pre-anal distance/SL	0.43	0.47	0.45
Post-anal distance/SL	0.05	0.08	0.06
Pre-pelvic distance/SL	0.17	0.20	0.19
Length of pectoral fin/SL	0.18	0.19	0.19
Length of pectoral fin base/SL	0.08	0.11	0.09
Length of caudal fin/SL	0.16	0.20	0.18
Max. body depth/SL	0.15	0.16	0.16
Min. body depth (caudal peduncle) /SL	0.09	0.10	0.09

Results

We primarily used the key of Springer and Williams (1994) for the identification of the species of the genus *Istiblennius* and subsequently identified the collected individuals as *I. lineatus* (Figs 2, 3, 5, 6) by analyzing the following morphological characters:

Dorsal rays XIII, 21–22; anal rays II, 22–23; pectoral rays 14; pelvic rays I, 3; teeth in jaws numerous and incisiform; no canine tooth posteriorly on lower jaw; edge of upper lip crenulate, of lower lip smooth; supraorbital tentacle branched; no cirri on nape; males have a blade-like uniformly pigmented fleshy crest on head (Fig. 5); females lack crest; dorsal fin deeply incised before soft



Figure 2. Male (above) and female (below) specimens of *Istiblennius lineatus* from the Makran Sea, Iran.



Figure 3. *Istiblennius lineatus*, male, Papua New Guinea, Cape Croisilles (with permission of J.E. Randall).



Figure 4. *Istiblennius pox*, male, Ramin, Chabahar, Sistan and Baluchistan Province, Iran.

rays; color pattern on caudal peduncle of males usually of dark stripes, dashes or squiggles; pattern on caudal peduncle of females of dark spots (Fig. 6); soft portion of dorsal fin with diagonal black lines. Total dorsal-fin elements of males 35–38 (rarely 38), of females 34 to 38 (rarely 38); and total vertebrae 39–43 (usually 40–42, both sexes) (see Springer and Williams 1994).

Istiblennius lineatus is distinguished from its close relative, *I. pox* (Fig. 4) by more or less uniformly dusky or banded crest on head of males (vs spotted crest on head of males). *Istiblennius lineatus* is distinguished from *I. spilatus* by margin of upper lip crenulated (vs. margins of both lips crenulated). *Istiblennius lineatus* is distinguished from *I. edentulus* by margin of upper lip crenulated (vs margins of both lips smooth).

Istiblennius lineatus is distributed from the Laccadive (Jones and Kumaran 1980) and Maldive islands, central Indian Ocean, east to Mangareva, Gambier Islands, Pacific Ocean. It occurs as far north as Toyohama, Japan. It is now recorded from the coastal area of the Makran Sea, Iran (Figs 7, 8).

Discussion

The lined rockskipper, *I. lineatus*, has a wide distribution range and it is found in the Indo-Pacific and Western Central Pacific oceans (Kami 1971). They inhabit the intertidal zone of rocky shores and rocky reef flats (Lieske and Myers 1994), and are found in the rock pools, har-



Figure 5. Pattern of crest in *Istiblennius lineatus* (male) from the Makran Sea, Iran.

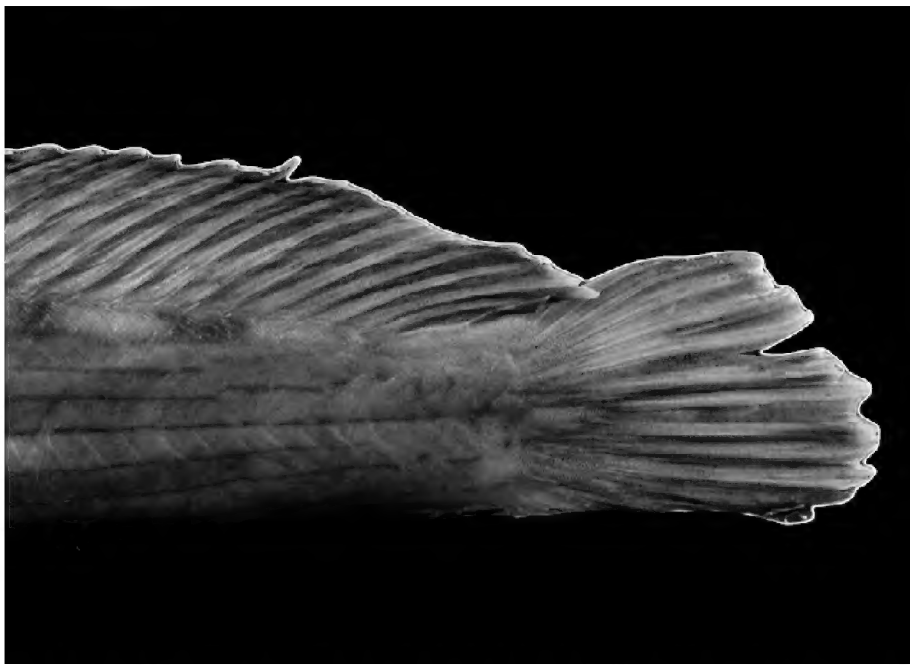


Figure 6. Pattern of caudal peduncle in *Istiblennius lineatus* (female) from the Makran Sea, Iran.

bors, and mangrove zones (Kuitert and Tono-zuka 2001), where they graze on algae present on the rocks. The present record represents a new addition to the marine fish species list for Iran, showing high biodiversity for the region. The record of the lined rockskipper in Iranian waters indicates that a suitable habitat for this species occurs along the Iranian coast of the Makran Sea.

Acknowledgements

We thank R. Sadeghi (Shiraz University) and H. Hashemi (Environment Department of Hormozgan Province) for the help and support during the fieldwork. The research work was funded by Shiraz University and was approved by the Ethics Committee of Biology Department (SU-9133305).

Authors' Contributions

HM collected the specimens; HM and HRE examined and identified the specimens and prepared, reviewed, finalized, and approved the manuscript.



Figure 7. Darya Bozorg shore, Chabahar, Sistan and Baluchistan Province, Iran, a new collection site for *Istiblennius lineatus*.

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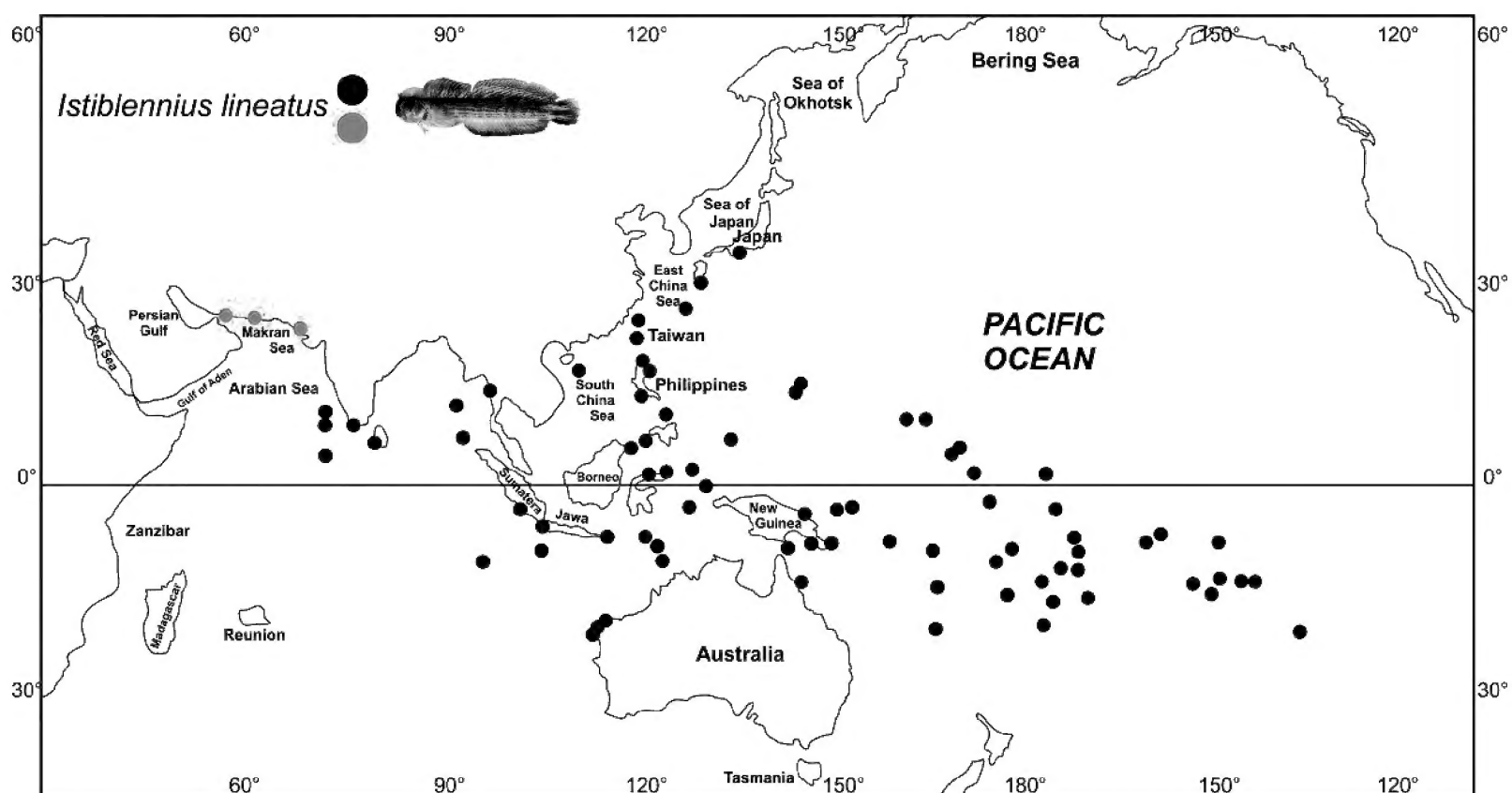


Figure 8. World distribution map of *Istiblennius lineatus* including new record in the coastal sides of the Makran Sea (red circles) and previous records (black circles).